

Effect of the dietary inclusion of *Camelina sativa* cake or oil for broiler quails on the breast meat sensory traits

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Objectives: The present study is part of a wide research project aiming at exploring the potential of *Camelina sativa* (CS), a sustainable alternative to possibly replace conventional feedstuffs into poultry diets, also thanks to its healthy fatty acid profile and high protein amount [1]. The present study tested the effect of a CS dietary inclusion for broiler quails (*Coturnix coturnix japonica*) on the sensory traits of breast meat.

Materials and Methods: To this purpose, a total of 600 15-day-old quails were randomly assigned to 5 experimental groups (10 replicated cages/group): a control group (CTRL) received a commercial diet for growing quails, whereas three other experimental groups received the CTRL diet with the inclusion of a 15% CS cake obtained from different CS varieties: Calena (CAL), a commercial CS variety; ALA which is a CS cultivar characterized by a reduced amount of glucosinolates, and a third CS cultivar selected for low linoleic acid content (PEARL). A fourth experimental group was designed to replace soybean oil with CS PEARL oil, having the healthiest fatty acid profile. Diets were isonitrogen and isoenergy. Quails were fed *ad libitum* for 21 days (15-35 days of age). At 35 days of age, quails were slaughtered at a commercial abattoir and after carcass refrigeration (+2 °C), 12 breasts/treatment (total n=60) were excised from carcasses, *vacuum* packaged and stored at -40 °C until sensory analysis was performed. The sensory analysis was conducted by a six-member trained panel. Panelists had two pre-test training sessions of 1 h each to familiarize with the matrix and select appropriate descriptors, possible off-odors and off-flavors. The descriptors were categorized into Odor (general odor, animal fat), Texture (tenderness, juiciness) and Flavor (general flavor, liver, animal fat) attributes. Scores were attributed using a descriptive non-structural 150-mm-long linear scale going from 0 (lowest intensity of the attribute) to 10 (highest intensity of the attribute). Presence/absence of selected off-odors (mustard, rancid) and off-flavors (mustard, cabbage, rancid, onion) was also evaluated. Data were analyzed with a mixed model (PROC MIXED) of the SAS 9.1.3 Statistical Analysis Software for Windows [2]. Experimental diet and the six panelists were considered as fixed and random effects, respectively. Least square means were obtained using Bonferroni test and the significance was calculated at a 5% confidence level. A χ^2 test with Marascuilo procedure was performed on off-odors and off-flavors characterization to detect possible differences among treatments. **Results and Discussion:** Overall the dietary inclusion of CS did not affect the sensory traits of quail's breast meat. The sole exception regarded the flavor animal fat, which was significantly lower in CAL than CTRL ($P<0.05$) meat, while ALA, PEARL and OIL treatment groups showed intermediate results. Regarding the possible off-odor and off-flavor presence, also in this case no differences between groups were observed and, overall, their absolute presence was limited. The sole off-odor which was identified in all groups was liver, a specific sensory attribute of quail meat [3]. Present findings are in agreement with previous research on chickens, where 5 or 10% CS expeller dietary inclusion did not negatively affect meat sensory traits [4].

Conclusions: Results of the present trial showed that a 15% dietary inclusion with *Camelina sativa* cake or a 100% substitution of soybean oil with camelina oil did not alter the sensory traits of quail meat. This is a key element to possibly consider the effective application of CS into quail nutrition, given the relevance of meat sensory traits for consumer's choice.

References:

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Key words: *Camelina sativa*, Sustainability, Quail meat, Panel test, Sensory traits.